
B-Channel Overload Control

The B-Channel Overload Control feature provides a solution to the problem situation of having a high rate of incoming calls from a Central Office over ISDN PRI trunks to busy destinations on a Meridian 1¹, causing slow dial tone and other realtime overload type problems on the Meridian 1.

The feature delays the release of an ISDN PRI call by using a configurable timer (BCOT) when a call encounters a busy condition. The delay in releasing the seized B-Channel prevents a new call from being presented on the same B-Channel. This delay cumulatively results in decreasing the incoming call rate, thereby avoiding degradation of real-time response. This delay is applied using ISDN protocol compliant messaging. The delay is in milliseconds, so that it is virtually transparent to the caller.

The value for the B-Channel Control timer is configured in Overlay 16, on a per-route basis. Although a value from 0-4000 milliseconds is accepted, a value of 256 is recommended. The entered value is rounded down to multiples of 128. After a value has been entered and rounded down (if necessary), the value is printed on the screen before the next prompt is displayed. For example, if a value of 400 is entered, the system rounds this value down to 384 and prints 384 on the display. The next prompt is then displayed.

After the BCOT timer expires, the normal disconnect sequence will take place and a new call may be presented.

1. An example where this could happen would be where a telemarketing firm advertises a product by giving an 1-800 number. In response to the advertisement, the company receives a burst of incoming calls in a short period of time. Many of the calls may receive busy treatment, and in a busy situation, the Meridian 1 rejects the calls.

Figure 20 and Figure 21 represent a “before-and-after” representation of the B-Channel Overload Control feature application.

Figure 20
Before the B-Channel Overload Control Timer has been applied

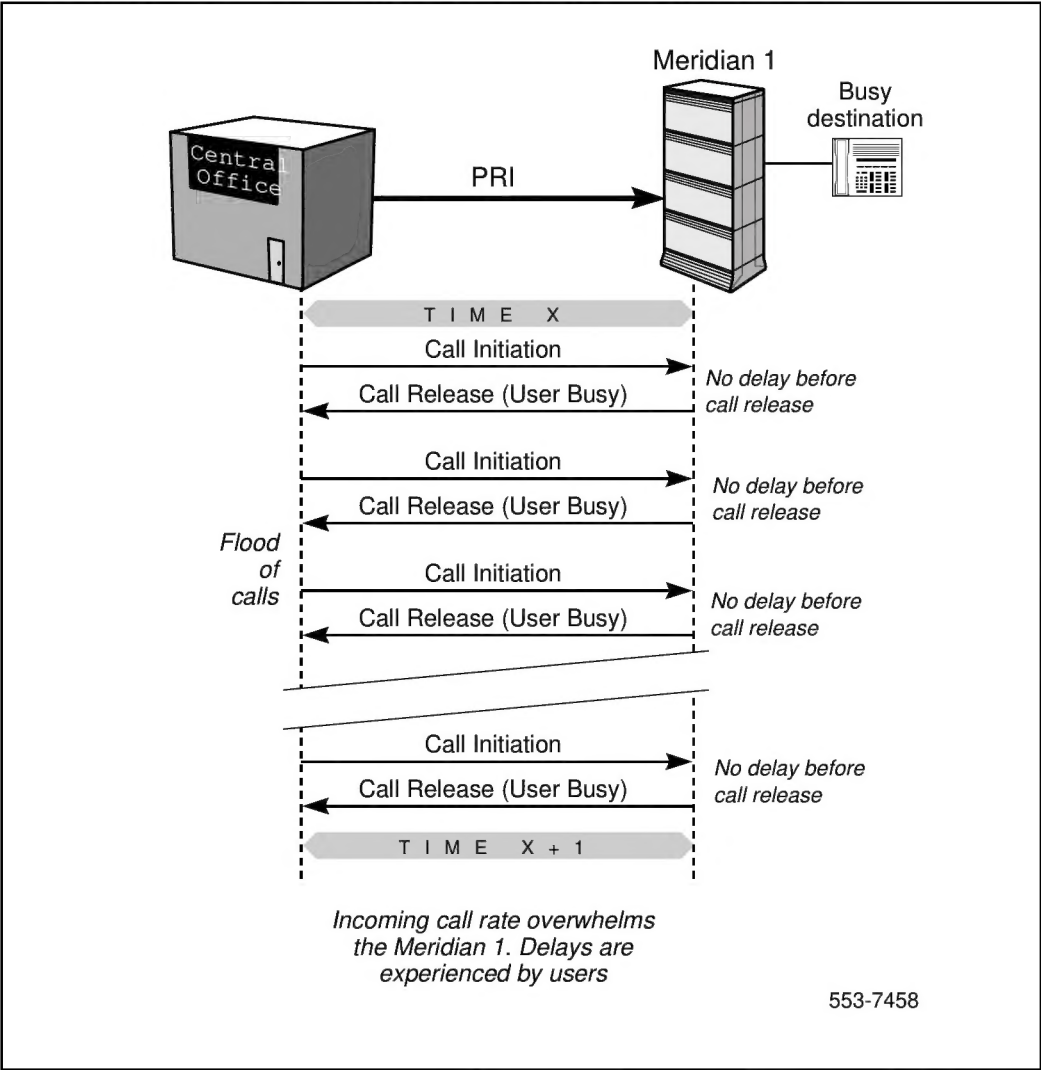
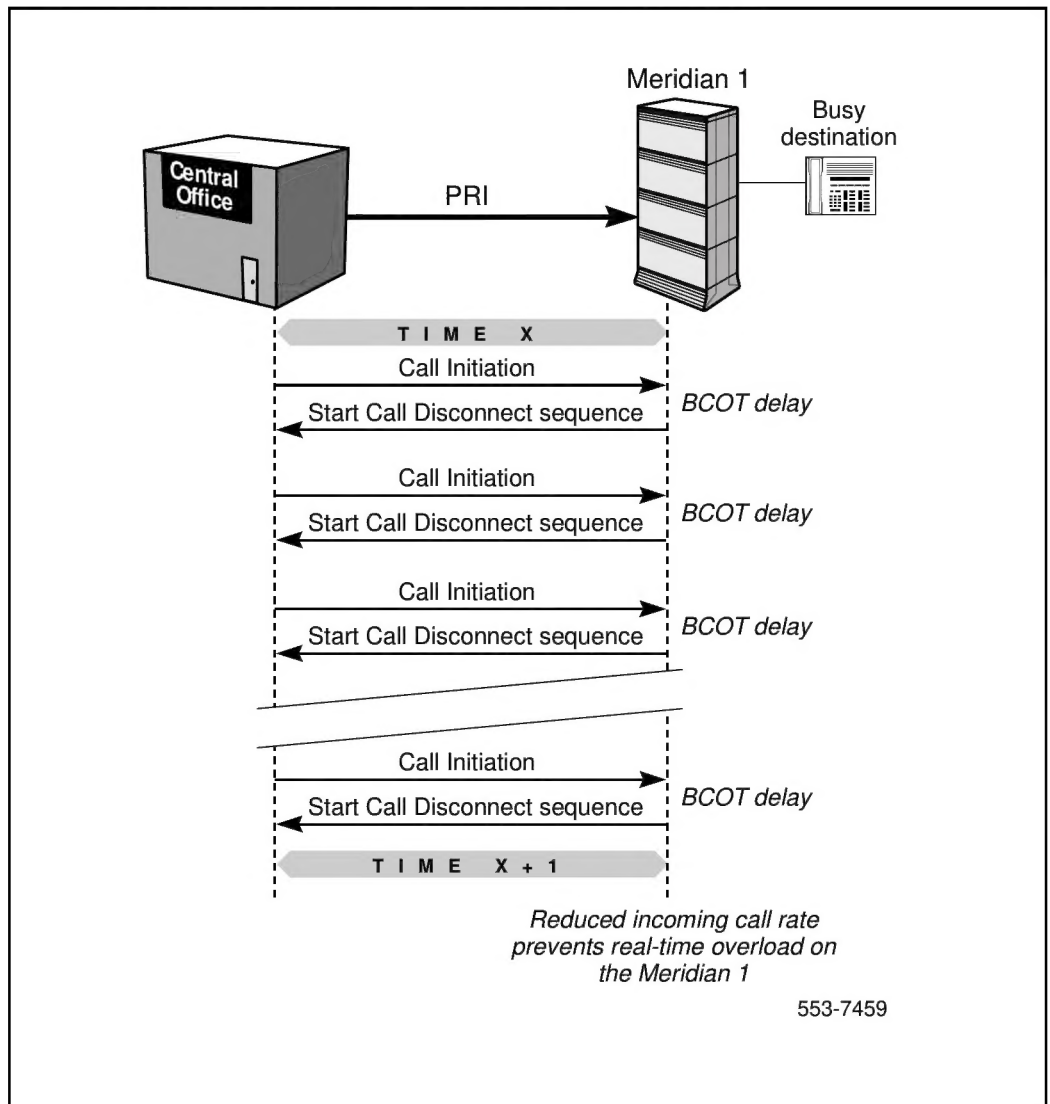


Figure 21
After the B-Channel Overload Control Timer has been applied



B-Channel Overload Control Timer (BCOT) considerations

Please consider the following pertaining to the application of the BCOT:

- When configuring the BCOT in Overlay 16, the recommended value to be used is 256 milliseconds (most problem scenarios can be solved with this value). Even though the maximum value of 4 seconds may be entered, it is suggested that this value not be used (since callers do not receive any audio feedback while the timer is running, they would receive only silence for four seconds).
- After a value is entered in response to the BCOT prompt in Overlay 16, the system rounds this value down by a multiple of 128 milliseconds, if necessary (the actual time delay is in the range of +0 to -128 milliseconds from the entered value). This value is printed before the next prompt is displayed.
- When a system is upgraded for the first time to a software release containing the BCOC feature, all BCOT timers are initialized to 0.
- By default, the BCOC feature is disabled on all routes (BCOT = 0). To activate the BCOC feature for a route, a service change on the BCOT timer is required using Overlay 16.
- A new Peg counts field for the “Total number of activations of BCOC activations for this route” is added to the TFC002 traffic report. This count will apply to all Meridian 1 routes that interface with DMS, Lucent, and NI-2 TR-1268 switches. For the Integrated Services Access (ISA) Call By Call Type and the NI-2 Call By Call Service Selection features, the peg counts are done against the service routes, and not a master route. The peg count for a master route will always be zero.

Refer to Tables and Table 30 for a sample traffic measurement report output.

Traffic measurement output

For non-ISA and non-NI-2 Call By Call service routes, the TFC002 traffic measurement report has been updated for the BCOC feature as shown by Table 29.

Table 29
TFC002 format for a non-ISA and non-NI-2 Call By Call routes

System ID	TFC002
...	
Route Number	Route Type
Total number of trunks configured	Total number of trunks working
...	Total number of incoming calls
...	Total number of outgoing calls
...	...
Total number of activations of BCOC for this route	

For ISA and NI-2 Call By Call service routes, the TFC002 traffic measurement report has been updated for the BCOC feature as shown by Table 30.

Table 30
TFC002 format for an ISA service route.

System ID	TFC002
...	
Route Number	Route Type
Total number of trunks configured	Total number of trunks working
...	Total number of incoming calls
...	Total number of outgoing calls
Total incoming calls on the service route	Total outgoing calls on the service route
Total number of activations of BCOC for this route	

Operating parameters

This feature applies only to the following ISDN PRI to North American Central Office connectivities:

- DMS-100
- DMS-250
- SL-100
- Lucent 4ESS
- Lucent 5ESS and
- National ISDN-2 (NI-2) TR-1268

This feature supports both circuit switched voice and data calls.

This feature does not distinguish between normal busy conditions and overload busy conditions, since its functionality depends on the BCOT value configured at the route level. All busy calls on the route receive the same BCOT treatment.

This feature does not support Virtual Network Services trunks.

This feature is activated for the following call types:

- incoming calls presented on a busy set on a node interfacing directly to a Central Office (see Figure 22 on page 180); or incoming calls from a Central Office being tandemed to a private network and presented on a busy set (see Figure 23 on page 180)
- incoming calls presented on an ACD DN whose ACD queue has reached its maximum limit
- incoming calls presented on a Controlled Directory Number (CDN), and being released by Customer Controlled Routing (CCR) due to a “User Busy” cause
- incoming calls that are tandemed to a route whose trunk members are all busy

Figure 22

Busy set is a on node interfacing directly to a Central Office

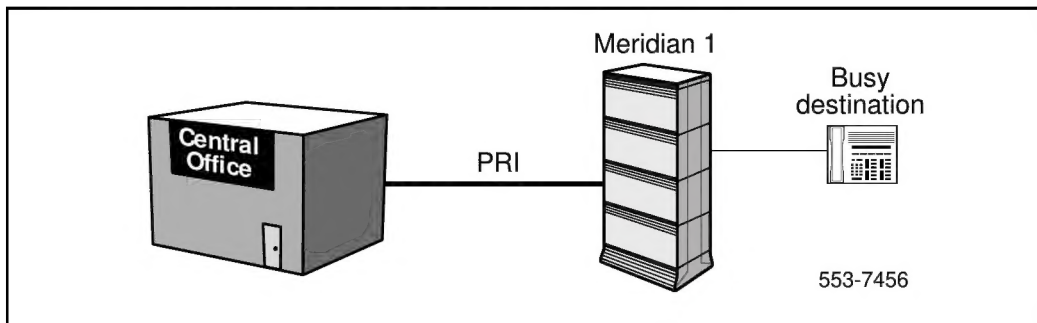
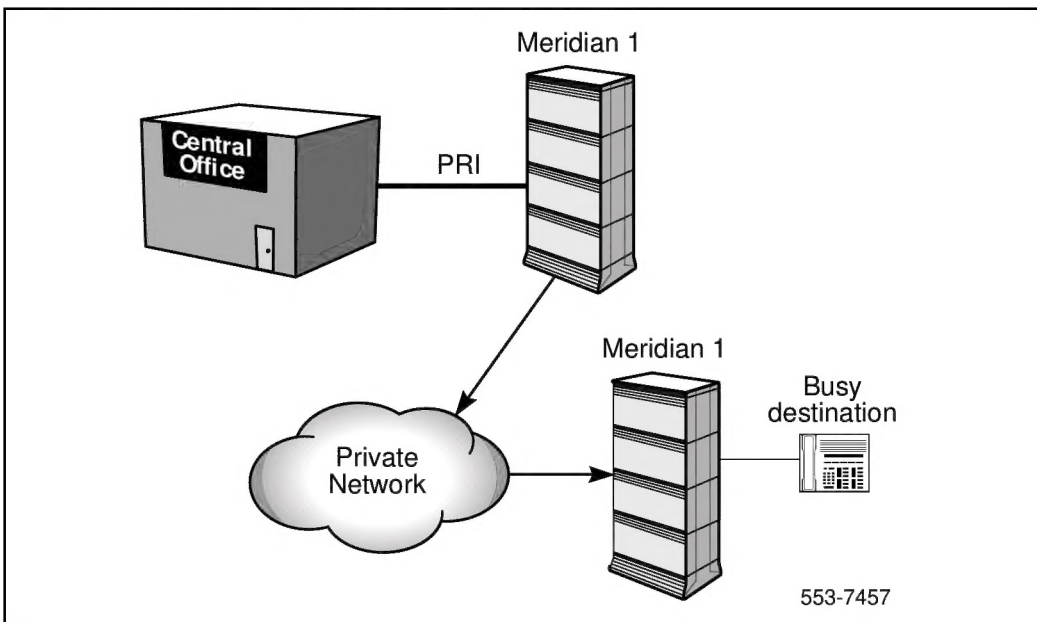


Figure 23

Busy set is a on node tandemed to a Central Office



Feature interactions

Automatic Call Distribution

ACD allows a large volume of calls to be made to the same DN (called the ACD DN), and answered by a group of telephones (called ACD agent positions). Incoming calls are distributed so that the agent that has been idle the longest receives the first call.

Whenever an incoming ACD call gets released immediately due to a “User Busy” cause, the Meridian 1 starts the B-Channel Overload Control timer and sends a “Call Proceeding” message rather than releasing the call immediately (the amount of time, in milliseconds, that the B-Channel remains seized depends on the value entered for the timer in Overlay 16). After the timer expires, the normal disconnect sequence will take place.

Call Interflow

Call Interflow allows an ACD supervisor to redirect excess traffic to an Interflow DN. All Interflow calls that are to be given busytone will be affected by the B-Channel Overload Control feature, in that a delay will be imposed on these calls before the caller receives the busytone.

Enhanced ACD Routing

Enhanced ACD Routing allows different delay treatments to be given to ACD calls from different sources but to the same ACDN DN. Enhanced ACD Routing uses a Control DN, which does not have agent positions but rather specifies a destination default ACD DN to which incoming calls are directed. Multiple Control DNs can place calls into the same ACD queue, so different treatment can be given to these calls (the treatment given to a call is determined by the parameters defined for the Control DN, and not the ACD queue).

The Control DN has a limit to the number of unanswered calls that it can have at its default DN. Once the limit is exceeded, new calls are given busytone and Central Office calls are placed in the ACD queue. These calls that are to receive busytone will be affected by the B-Channel Overload Control feature, in that a delay will be imposed on these calls before the caller receives the busytone.

Secondary DN Call Blocking

Secondary DN Call Blocking blocks new incoming ACD calls to the Secondary DN of an ACD agent, so that the agent can handle a current call without interruption. The calls to the Secondary DN receive busytone. These calls that are to receive busytone will be affected by the B-Channel Overload Control feature, in that a delay will be imposed on these calls before the caller receives the busytone.

Supervisor Control of Queue Size

Supervisor Control of Queue Size allows ACD DNs busytone to be given to selected call types. These calls that are to receive busytone will be affected by the B-Channel Overload Control feature, in that a delay will be imposed on these calls before the caller receives the busytone.

Integrated Services Access

Integrated Services Access (ISA) allows multiple routes to share the same the common pool of B-Channels for connectivity between a Meridian 1 PBX and a Central Office PBX such as the DMS-100 and the DMS-250. Unlike dedicated routes, which require each service route to have its own trunks of the same trunk type, ISA trunks are shared among many service routes, which can carry calls of different types that can change on a per call basis.

The B-Channel Overload Control feature interacts with ISA in that all incoming calls over an ISA route that are released because of a “User Busy” cause, will be delayed as defined by the B-Channel Overload Control timer.

NI-2 Call by Call Service Selection

NI-2 Call By Call Service Selection allows multiple services to share the same the common pool of B-Channels for an NI-2 TR-1268 PRI interface. Dedicated routes are not required. The service types can be assigned on a per call basis.

Intercept Treatment

All calls that are released by Intercept treatment due to a “User Busy” cause will be delayed as defined by the B-Channel Overload Control timer.

Remote Virtual Queuing

Since Remote Virtual Queuing interworks over a Meridian 1 to DMS interface, the B-Channel Overload Control feature imposes a delay on the automatic retry capability of RVQ, which is used when congestion is encountered due to no idle trunks being available.

Auxiliary Products

All calls that interact with the auxiliary products Customer Controlled Routing (CCR), Integrated Call Center Manager (ICCM), and Meridian Link, and that are being released due to “User Busy” cause, are delayed by B-Channel Overload Control until its timer expires.

Attendant Blocking of DN

This feature enables the attendant to block calls from being made to a DN while an external call request from that DN is being processed. The blocked calls receive busytone.

The B-Channel Overload Control feature interacts with Attendant Blocking of DN in a Meridian 1 to Central Office interface, by imposing a delay on any call coming in from a CO that terminates on a blocked DN and receives busytone treatment due to “User Busy” cause.

Call Connection Restriction

This feature imposes restrictions on a caller’s access to the public network, private network, and services and features. If any restriction is detected when a call is attempted, the call is denied and intercept treatment as defined in the Customer Data Block is applied. If the intercept treatment results in the call being released due to a “User Busy” cause, the B-Channel Overload Control feature imposes a delay on the release.

Meridian Network Services Drop Back Busy and Off Hook Queue

The B-Channel Overload Control feature does not affect the operation of the Drop Back Busy capability. If Off Hook Queuing is active, B-Channel Overload Control will not be activated.

Network Individual Do Not Disturb

This feature allows extends the functionality of the Individual Do Not Disturb feature to a network environment. If a DN is in the Do Not Disturb mode, calls may be made from it, but incoming calls to it would receive Intercept treatment. If the treatment is busytone, the B-Channel Overload Control feature imposes a delay on the release of these calls.

Trunk Barring

This feature allows customers the option of denying certain types of trunk-to-trunk connections. Attempted calls over these trunks would receive Intercept treatment. If the treatment is busytone, the B-Channel Overload Control feature imposes a delay on the release of these calls.

Feature packaging

The B-Channel Overload Control feature requires the following packages:

- Integrated Services Digital Network (ISDN) package 145
- 1.5 Mbps Primary Rate Access (PRA) package 146

Feature implementation

LD 16 – Configure the B-Channel Overload Control timer (in response to the BCOT prompt).

Prompt	Response	Description
REQ	NEW CHG	Add new data Change existing data.
TYPE	RDB	Route Data Block.
...		
ISDN	YES	Integrated Services Digital Network.
...		

- IFC	D100 D250 S100 ESS4 ESS5 NI2	Supported interface types. D100 = DMS-100 D250 = DMS-250 S100 = SL100 ESS4 = Lucent 4ESS ESS5 = Lucent E5SS NI2 = National ISDN-2
...		
- - BCOT	(0)-4000	The value for the B-Channel Control timer, in milliseconds. This value indicates the delay that the Meridian 1 will impose on a B-Channel before starting the disconnect sequence. A value of 256 is recommended. The entered value is rounded down to multiples of 128. After a value has been entered and rounded down (if necessary), the (rounded down) value is autoprinted on the screen before the next prompt is displayed. Refer to "B-Channel Overload Control Timer (BCOT) considerations" on page 176 for more information. Note: <i>In the case of Integrated Services Access (ISA) Call By Call Type and NI-2 Call By Call Service Selection, BCOT is prompted only for Service Routes.</i>
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Note: You may print the BCOT timer value that was entered in LD 16 by using LD 21.

Feature operation

No specific operating procedures are required to use this feature.